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Utah Department of Transportation

Final Report

Aeronautics Division — Performance Audit

October 31, 2008

Aeronautics Division – Performance Audit

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Aeronautics Division - Performance Audit

Executive Summary

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A. Introduction

This executive summary presents the findings and recommendations of a performance audit of the Utah Department of Transportation (UDOT) Division of Aeronautics. The audit assessed the ownership and operations responsibilities of the Department of Aeronautics for aircraft used by Utah state agencies. Three main aircraft operations issues were identified and evaluated:

- Fees paid by state agencies for the use of the aircraft do not cover operating expenses. The resulting deficit requires a subsidy which has increased in recent years, and is forecast to increase further in future years.
- In the past, the Aeronautics Restricted Account has been used to finance state aircraft operations. There is concern that the statutory basis for this fund does not include financing aircraft operating costs.
- The Division of Aeronautics has no mechanism to finance the capital costs of either major engine overhauls or the purchase of new aircraft.

Findings and recommendations from the evaluation of these issues are provided in this report. The report also summarizes the business case for state ownership and operation of aircraft and discusses organizational roles and responsibilities in state government for the provision of air transportation services.

B. Current Situation

The Utah Division of Aeronautics is responsible for airport planning and grants management for general aviation airports and the operation and maintenance of aircraft for official State business purposes. These responsibilities include:

- Operation of three fixed-wing aircraft:
  - A King Air B200 that transports up to eight passengers for $900 per flight hour
  - A King Air C90 that transports up to six passengers for $775 per flight hour
  - A Cessna 206, owned jointly with the Department of Public Safety (DPS), that is used to support managements of the capital programming and project delivery at general aviation airports across the state
- The King Airs fly a combined 600 to 650 hours per year, primarily for short trips

- Managing state agency use of the aircraft. Many different state agencies use the aircraft. The distribution of use across agencies between 2004 and 2007 was:
  - The Department of Health (19%)
  - The Department of Facilities and Construction Management (15%)
  - The Governor and Lieutenant Governor (8%)
  - UDOT (7%)
  - Other agencies (51%)[1]
- Employment of seven full-time staff:
  - Four pilots
  - One mechanical supervisor
  - Two mechanics who also provide maintenance services to the DPS and the Department of Natural Resources Division of Wildlife Resources (DWR)
- Ownership of a hangar that also houses the aircraft, helicopters, and office facilities of DPS and DWR, who pay a rental fee for use of the hangar

Fees collected for aircraft use do not cover the full cost of operations, resulting in an annual deficit of $660,000; the current practice is to use the Aeronautics Restricted Account to bridge the funding gap. Using this account to pay for airplane operations reduces the limited funds available for airport construction projects. Revenues to the Aeronautics Restricted Account come from an aviation fuel tax that was established to address safety issues and to support runway, taxiway, and apron maintenance and construction at airports.[2]

C. Overall Recommendations

Recommendation 1: Fund air transportation services from the General Fund or alternate source. This ensures that the Aeronautics Restricted Account is available to support capital improvement at the state's general aviation airports and ensures that the account is closely aligned with the enabling statute.

Recommendation 2: Increase the use of state aircraft to reduce the operating deficit. To achieve this goal, management should set targets for the minimum number of annual flight hours. According to industry standards, aircraft used to provide for-profit transportation are managed efficiently when in use 85% of available days. (Available days exclude scheduled maintenance days. For state business available days would also exclude weekends and holidays.) Due to geographic constraints and limited out-of-state flights, a use target of 70% of available days is more realistic for the Utah state aircraft. This target

[1] The top users of the "Other" category include: University of Utah, FAA, Treasurer, Trust Lands, Huntsman Cancer, DCED, DEQ, DNR, Oil, Gas and Mining, and Courts.
[2] Utah Code Section 59-13-402

would add an additional 100 flight hours or more per calendar year for a combined total of 700 to 750 flight hours for the C90 and B200, resulting in a deficit reduction of at least 12%.

Recommendation 3: If aircraft are not able to reach targets set for the productive use of the state's assets, reduce capacity. Consolidate the two King Air aircraft owned by the Division of Aeronautics and the Baron owned by DPS.

Recommendation 4: Plan and budget for aircraft refurbishments, engine overhauls, and the replacement of aircraft. Charge customers an additional $100 per flight hour for an Engine Reserve Fund. This will reduce the amount needed from the General Fund to subsidize engine overhauls or the capital cost of replacing aircraft.

D. Finance Options

Continuing the state's aircraft operations requires an annual subsidy, which today is $660,000. There are three options available to UDOT to finance aircraft operations:

Status quo. Maintaining the status quo results in a growing deficit. The current practice is to fund the deficit from the Aeronautics Restricted Account. Using money from this account for aircraft operations reduces the amount of funds available for construction and maintenance projects at airports at a time when construction costs are increasing faster than revenues. The status quo provides no mechanism for budgeting for aircraft refurbishment or replacements.

Finance based on the current operating deficit. This option finances the deficit from funds other than the Aeronautics Restricted Account. This option results in a growing deficit but ensures that Aeronautics Restricted Account funds are available for airport improvement projects. The option implies that any future aircraft refurbishment or replacement will need to be financed from the General Fund.

Finance contingent upon a lower level of General Fund subsidy. Under this approach, the reduced deficit would be financed with funds other than the Aeronautics Restricted Account. This option reduces the state subsidy of aircraft by establishing a target for the increased use of the aircraft. The revenue from increased user fees achieved through increased flight hours could reduce the deficit by up to 14%.

Increase fees charged to use state aircraft as a contribution to future aircraft refurbishment or replacement costs. This option would set aside funds to meet some of the future capital costs. There is a concern that further increases in charges for flight hours would decrease the use of the aircraft reducing revenue.

I. Introduction and Audit Purpose

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At the request of the Utah Department of Transportation (UDOT), Dye Management Group, Inc. conducted an independent analysis of the current business and management practices regarding airplane operations of the UDOT Division of Aeronautics. This document presents the results of this analysis as well as recommendations for managing and financing the aircraft.

A. Background

The Utah Division of Aeronautics, among other responsibilities, manages and operates three state aircraft. These are: a King Air B200 and a King Air C90 used for transporting state employees on official business and a Cessna 206, owned jointly with the Department of Public Safety (DPS). The King Air B200 can carry up to eight passengers and the King Air C90 up to six. Agencies pay a rental fee based on flight hours. This rental fee and other fees charged to Division of Aeronautics customers do not cover the full cost of ownership and operation of these aircraft, resulting in an increasing annual operating deficit of about $660,000.

Currently, the aircraft operations deficit is funded from the Aeronautics Restricted Account. This is problematic for several reasons:

- The statutory basis for this fund does not include aircraft operating costs
- The amount needed to fund the deficit is growing
- Running a deficit prohibits the Division from planning and budgeting for the capital costs associated with purchasing new aircraft and major engine overhaul and refurbishment
- Using funds from the Aeronautics Restricted Account reduces funds available for airport construction projects at the smaller general aviation airports across the state that have few other revenue sources

B. Approach

This report draws on data on the Utah Division of Aeronautics' expenditures between FY 2002 and FY 2008, flight records, interviews with UDOT staff, and a survey of other states' practices. The general approach of this audit was to make recommendations based on:

- Review of the current practices for airplane operation and management
- Evaluation of the business case for state-owned airplanes

- Evaluation of alternative financial management practices available to Utah for financing the capital and operating costs of the state aircraft and for charging airplane users to recover these costs
- Survey of organizational roles and responsibilities for owning and operating state airplanes in other states

C. Organization of the Report

This report is divided into four main sections and two appendices:

- **Section I. Introduction and Audit Purpose** explains the focus for the audit analysis and outlines the analysis approach
- **Section II. Background and Findings** presents the business case for owning and operating the state aircraft, introduces the Division of Aeronautics, and presents background on the Division's current operation and management practices of aircraft; this section also presents findings on the current aircraft operations and the financial situation of the Division
- **Section III. Overall Recommendations** presents overall recommendations for managing the state aircraft
- **Section IV. Finance Options** presents financing options for the state aircraft
- **Appendix A** provides the results from a survey of other states
- **Appendix B** details the sources and uses of funds in the Aeronautics Restricted Account

II. Background and Findings

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This section provides background on the UDOT Division of Aeronautics. The roles and responsibilities of the Division and its current operation and management practices for the state aircraft are outlined. This section describes the business case for the state government's ownership and operation of aircraft and presents findings on the current operations and management of state aircraft.

A. The Division of Aeronautics

The main responsibilities of UDOT's Division of Aeronautics are airport planning and grants management for general aviation airports and the operation and maintenance of the state aircraft for official business purposes. The Division is also responsible for the promotion of aviation throughout Utah.

Airport planning and grants management responsibilities include:

- Conducting statewide airport planning and capital project planning for the general aviation airports across the state; much of this involves working in close collaboration with the Federal Aviation Administration (FAA) and local airport owners and operators
- Managing FAA grants and state funds distributed to airports for capital project construction and maintenance
- Distribution of aviation fuel tax revenue
- Distribution of funds for the Civil Air Patrol

Operation and maintenance of state-owned aviation assets responsibilities include:

- Operation and maintenance of state-owned air navigation aids
- Operation and maintenance of the state aircraft for official business purposes

This report focuses on the Division's responsibilities for the ownership and operation of the aircraft.[3] The Division operates three fixed-wing aircraft, including a King Air B200 (eight-passenger capacity) and King Air C90 (six-passenger capacity). The third aircraft, a Cessna 206, is owned jointly with DPS and supports construction and maintenance projects at airports. Funding associated with this aircraft is not addressed in this document.

[3] For information on the Division's other responsibilities, please see the Division of Aeronautics website at http://www.dot.state.ut.us/main/f?p=100:pg:802709731500125:::1:T,V:190,

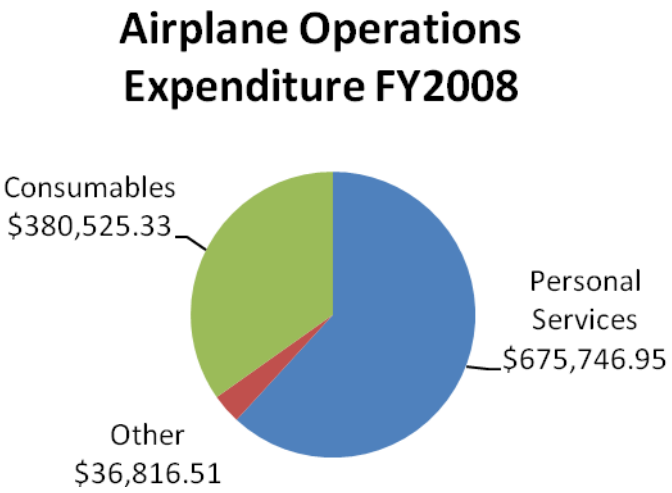
Seven full-time staff are directly associated with these aircraft: four pilots, two mechanics, and one mechanical supervisor. The mechanics provide aircraft maintenance to DPS and the Division of Natural Resources Department of Wildlife Resources (DWR) for their fixed wing aircraft. Maintenance of state-owned helicopters is provided under contract by a private firm. The hangar owned by the Division of Aeronautics also houses the aircraft and office facilities of DPS and DWR.

B. Aircraft Ownership and Operations Cost Structure

The Division of Aeronautics segregates and accounts for expenditures associated with aircraft ownership and operations as a distinct cost center. Aircraft expenditures include those costs associated with the salaries and benefits for seven full-time staff (Personal Services) as well as the cost of consumables such as fuel and replacement parts (Consumables). With the exception of jet fuel, which is consumed in proportion to the distance flown annually by the state airplanes, other costs associated with the aircraft expenditure are fixed, shown in Exhibit II-1 below. The maintenance work performed and aircraft parts purchased in support of DPS and DWR aircraft are reimbursed.

Operating costs for the state airplanes rose from $878,206 in FY 2004 to $1,093,089 in FY 2008.

Exhibit II-1: Airplane Operations Expenditure Budget FY 2008[4]



Revenue is generated through an hourly fee charged to agencies for use of the aircraft. In common with industry practices, fees are charged for actual flight time. The state comptroller's office must approve any rate increases to the hourly fee. The Governor has priority use of the aircraft. Any rental fees collected from leasing hangar space to other agencies are also included in aircraft revenue.

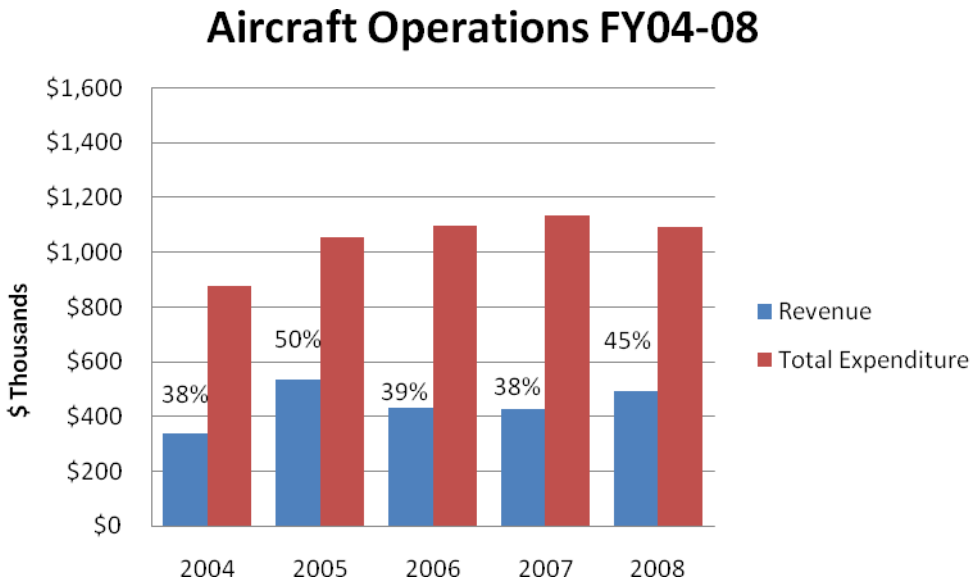
[4] 97% of Aircraft Operations Budget goes to the fixed costs of Consumables and Personal Services; the cateogry "other" includes non aircraft-related travel expenses in support of aircraft such as auto mileage and lodging.

Revenue is also generated through maintenance performed on DPS and DWR aircraft by Division mechanics. As of 2008, the hourly fee charged by the Division of Aeronautics for maintenance service to these agencies is $39.23 equivalent to the mechanics' hourly pay ($24.79) multiplied by an overhead factor (1.5825). This rate is below the "shop rates" charged by private industry. The UDOT comptroller must approve any increase in labor rates.

C. Operating Deficit

Income from user fees and mechanic fees does not cover the full cost of aircraft operations, accounting for between 38% and 45% of operating costs over the past five fiscal years, despite progressively increasing aircraft use charges. The rate charged per hour for use of the King Air B200 was $485 in 2006 and increased to $900 as of July 1st, 2008. The hourly charge for use of the King Air C90 increased from $395 in 2006 to $775 as of July 1st, 2008. During this same period, the deficit has ranged from a low of $538,111 in FY 2004 to a high of $706,283 in FY 2007. In Exhibit II-2 below, income from aircraft use and mechanics fees (blue) is expressed as a percentage of total aircraft expenditures (red).

Exhibit II-2: Aircraft Operations FY04-08



The difference between aircraft expenditures and revenues is the aircraft operations deficit, detailed in Exhibit II-3 below.

Exhibit II-3: Aircraft Operations Deficit FY 2004-2008

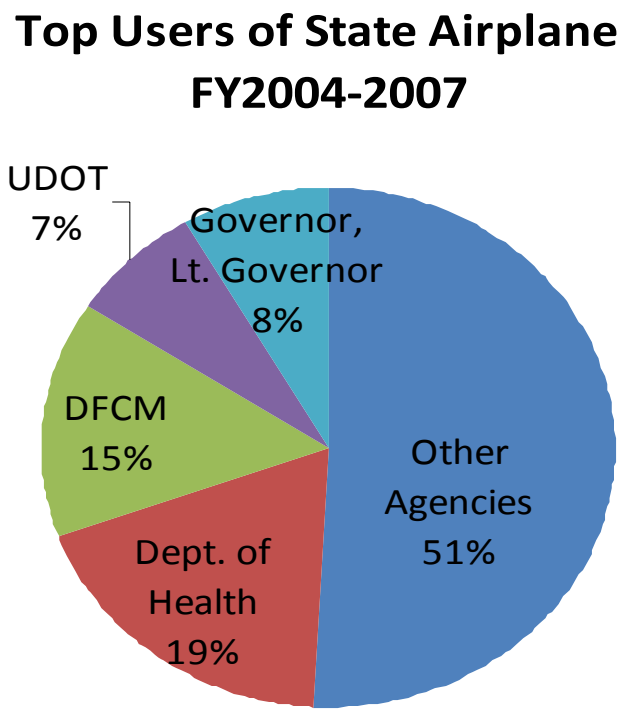
Fiscal Year	2004	2005	2006	2007	2008
Aircraft Revenue (User Fees)	$340,095	$534,958	$430,708	$427,576	$433,700
Aircraft Expenditures	$878,206	$1,053,700	$1,097,639	$1,133,859	$1,093,089
Closing Balance	($538,111)	($518,742)	($666,931)	($706,283)	($659,389)

Source: Utah Division of Aeronautics Cash Flow Matrix FY 2004-2008

1. Customers of the State Aircraft

Many different state agencies use the state's aircraft. Exhibit II-4 below shows the top users of the state aircraft as a percentage of total flights taken between FY 2004 and FY 2007. UDOT, the Governor and Lieutenant Governor, the Department of Facilities and Construction Management (DFCM), and the Department of Health are the single largest customers for aircraft hours.[5]

Exhibit II-4: Top Users of the State Airplanes



[5] Other agencies include: University of Utah, FAA, Treasurer, Trust Lands, Huntsman Cancer, DCED, DEQ, DNR, Oil, Gas and Mining, and Courts.

Key state officials rely on the use of state aircraft for both intra and interstate travel to ensure productive use of their time. Having aircraft on call enables senior officials' time to be used efficiently and provides the flexibility to respond to emergency situations as they arise. Additionally, the state aircraft are able to meet the security requirements for the Governor's travel.

2. Utilization of Aircraft

The state aircraft are underutilized. Since planes can only recover fees for flight time, underutilization contributes to the aircraft operations deficit. Use of the aircraft declined from a high of 69% for the King Air B200 and 68% for the King Air C90 in calendar year 2002 to 51% and 63%, respectively, in calendar year 2008.[6] If current trends continue through the end of calendar year 2008, the aircraft will only be in operation about 55% of total available days, which are non-weekend, non-holiday, and non-scheduled maintenance days. In the private sector, industry norms for this type and purpose of aircraft are closer to 85%.[7] Exhibit II-5 below presents aircraft usage for the calendar years 2002 through 2008 as a percentage of total available days in use.

Exhibit II-5: Aircraft Calendar Use

Aircraft Usage: (Percentage of Available Days in Use)		
	B200	**C90**
2002*	70% (373 hrs)	66% (328hrs)
2003	74.4% (345 hrs)	70.1% (359 hrs)
2004	68.5% (352 hrs)	66.7% (344 hrs)
2005	66.5% (330 hrs)	70.4% (349 hrs)
2006	62.4% (304 hrs)	65% (368 hrs)
2007	58.9% (283 hrs)	64% (322 hrs)
2008 (YTD)[8]	51% (128 hrs)	63% (197 hrs)

* Note: During the 2002 Winter Olympics held in Salt Lake City from February 8th through February 24th, the airspace was restricted and the aircraft could not fly

[6] The 2008 data represents aircraft use as of July 1st, 2008. Projections were made based on the continuation of these trends through the rest of the calendar year.
[7] Agur, Peter. "Wyoming Department of Transportation Department of Aeronautics Aviation Services Strategic Planning Study". The Van Allen Group, Inc. October, 2006.
[8] Year to Date as of July 1st, 2008.

Because many of the expenditures associated with aircraft operations are fixed, the more the planes are flown, the lower the hourly rate needed to recover the costs associated with aircraft expenditure.

a. Constraints on efficient use of aircraft

Providing service within the geographic constraints of the state limits the amount of flying time the state aircraft can achieve. These constraints include short flight legs that average between one and one-and-one-half hours in length. Although the range of the aircraft can accommodate flights up to four hours in length, there are limited opportunities for out-of-state flights. Increasing the length of flight legs would increase the productivity of the aircraft.

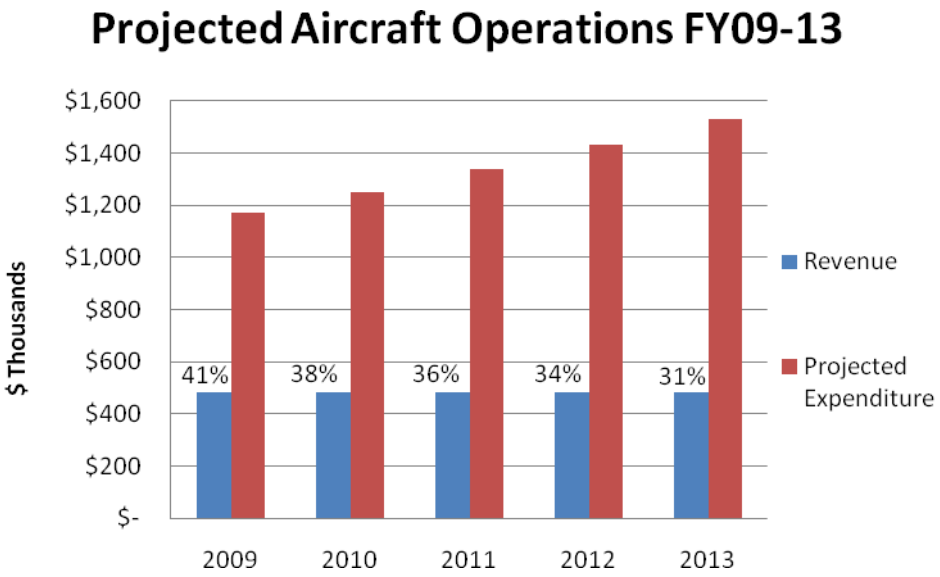
Another constraint is Utah's uneven population distribution, which makes it difficult to schedule multiple flights for aircraft in the same day. Utah is characterized by concentrated population and government activity in Salt Lake City. There is demand for flights originating in the capital and flying to remote population centers. The reverse demand does not exist to the same extent. This means that a typical flight will begin in Salt Lake, fly for an hour to reach its destination, drop off passengers, and wait for passengers to make the return flight. Low demand for flights originating anywhere other than Salt Lake City means that the plane remains idle while waiting for passengers.

D. Future Operating Deficit

The costs of jet fuel, labor, and other inputs have been increasing more rapidly than inflation, further widening the deficit between aircraft revenue and expenditures. In 2009, revenue is forecast to cover an estimated 41% of aircraft expenditures while by 2013 revenue is projected to cover only 31% of aircraft expenditures.

Exhibit II-6 below illustrates the decreasing percentage of the aircraft operations budget covered by revenue. Income from aircraft use and mechanic fees (blue) is expressed as a percentage of total aircraft operations expenditure (red). The deficit is equivalent to expenditures less revenue. This graph forecasts a widening gap between aircraft operations and revenue if current operating and finance practices are maintained.

Exhibit II-6: Aircraft Operations Projections FY09-13



E. Past Practices Used to Fund the Gap

The Aeronautics Restricted Account is currently used to bridge the funding gap for aircraft operations. Using the Aeronautics Restricted Account to cover the airplane operations deficit has three major disadvantages: 1) the amount needed to fund the deficit is growing; 2) running a deficit prohibits the Division of Aeronautics from planning and budgeting for the capital costs associated with purchasing new aircraft; and 3) the actual costs associated with airport capital construction projects have increased.

Revenue from the Aeronautics Restricted Account is generated by an aviation fuel tax established to address safety issues and support runway, taxiway, and apron maintenance and construction at airports. The statutory basis for this fund is shown in Exhibit II-7 below.

Exhibit II-7: Aircraft Operations Sources of Revenue

Revenue Source	Purpose
Aeronautics Restricted Account	The Aeronautics Restricted Account is funded by the Aviation Fuel Tax. This fund is meant to be used for the "construction, improvement, operation, and maintenance of publicly used airports in the state and the payment of principal and interest on indebtedness incurred for those purposes" *Utah Code Section 59-13-402*
Aircraft Revenue (User Fees)	Aircraft consumables including jet fuel and parts

F. Replacement and Refurbishment of Aircraft

The manufacturer of the state's aircraft recommends engine overhaul every 3,600 hours of operation. Based on the historical use of the aircraft, this would result in a major overhaul every ten years. When determining whether to refurbish the aircraft or to purchase new aircraft, the Division considers the rising maintenance costs of aging aircraft and weighs this against the trade-in value of the plane and the cost of purchasing a new airplane.

The King Air C90 was purchased new in 1998 with funds from the Aeronautics Restricted Account and was scheduled for replacement in FY 2009. This plan has since been canceled. A conservative figure for the trade-in value of the King Air C90 is estimated by the Division of Aeronautics at $1.25 million, and the cost of purchasing a comparable new aircraft, according to the manufacturer, is about $3.2 million. The cost of major refurbishments including engine overhaul, exterior painting, and interior upgrades is estimated between $775,000 and $805,000. DPS expressed interest in purchasing the King Air C90 from the Division of Aeronautics should the Division sell the aircraft.

The King Air B200 was purchased new in 2000 with funds from the Aeronautics Restricted Account and is scheduled for refurbishment or replacement in FY 2011. Engine overhaul, exterior painting, and interior upgrades for the B200 are estimated at $1.1 million.

G. State Government Role in Aviation

DPS, DWR, and the Division of Aeronautics own and operate government aircraft in Utah. The aircraft owned by DPS and DWR support agency-specific operations while the Division of Aeronautics provides air transportation passenger services to any government agency. Occasionally the DPS provides passenger services with their Baron when both King Airs are scheduled.

DWR and DPS aircraft have highly specialized functions. The state as a whole benefits from the economy of scale in housing all the aircraft in one hangar and having a single labor force responsible for maintenance.

1. Department of Public Safety Aircraft

DPS operates a Beech 58P Baron, two AS350 Eurocopters, and has joint ownership of a Cessna 206 with the Division of Aeronautics. All of the aircraft support law enforcement and search-and-rescue operations and are housed in the Division of Aeronautics hangar in Salt Lake City. Maintenance on the Baron and Cessna 206 is performed by Division of Aeronautics mechanics and the highly specialized helicopter maintenance is contracted out.

The Baron is "on-call" to support law enforcement operations but remains largely underutilized. DPS is interested in replacing the Baron and would likely consider purchasing and operating the King Air C90 from the Division of Aeronautics as a replacement for the Baron. In the 2007 calendar year, the Baron was used a total of

204 hours, of which nearly 100 hours were flown to provide additional capacity for the Division of Aeronautics.[9] 300 to 400 flight hours would represent efficient use of this aircraft.

2. Division of Wildlife Resources Aircraft

DWR uses three retrofitted Cessnas for stocking fish, surveying wildlife, and performing other technical operations. DWR employs the pilots that fly these aircraft, which are used for highly specialized purposes. The Division of Aeronautics maintenance crew provides mechanical and maintenance support for these aircraft.

3. Other States

States with some similarities to Utah's distribution of population and size were surveyed to identify their organizational roles, responsibilities, and financial practices for operating aircraft. The states surveyed were: Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Oklahoma, Oregon, Washington, and Wyoming. The following points generally describe the roles and responsibilities for managing aircraft in these states:

- **Operating state airplanes is not typically a Department of Transportation function**. In most states, an agency other than the Department of Transportation was responsible for the operation and management of state owned aircraft, such as the Office of General Services in New Mexico and law enforcement agencies in Oregon, Washington, and Colorado. In Montana, the Governor's Office owns a plane through the Air Transportation Program. Exceptions include Wyoming and Idaho, whose state airplanes are run by Divisions of Aeronautics within Departments of Transportation.
- **All surveyed states had budget shortfalls associated with aircraft operations.** The deficit between user fee-generated revenue and airplane operations expenditures was absorbed by a general fund or by the agency managing aircraft operations. States were not able to provide quantitative data on the extent of these deficits.
- **Few states budgeted for the capital costs associated with purchasing new aircraft.** Only Colorado had established a fund for the capital replacement of aircraft; all of the other states depend on special appropriations by their legislatures to cover the purchase of new aircraft or the cost of major refurbishments.

Additional survey details are available in Appendix A.

[9] DPS provided information that the Baron was used a total of 204 hours during calendar year 2007. In 2008, this figure is expected to increase to 250 hours. "Hours in use" is defined by DPS as time spent from taxi to landing.

H. Business Case for State Operations

Operating a state aircraft provides many benefits to the citizens of Utah, including reduced costs associated with travel time and increased employee efficiency. The ability to travel on short notice and to remote locations is especially important to key government personnel such as the Governor and State Legislators; by avoiding travel time, state officials can focus on the key functions of their positions. The majority of locations to which the state aircraft consistently fly are not served by commercial airlines. Charter service does not provide the same value to state agencies as the state aircraft in terms of passenger capacity, departure flexibility, aircraft functional capabilities, or price.

In many instances, the time spent traveling to a remote location by car would prohibit a government employee from making the trip in the first place. This would leave isolated communities underserved. For example, state aircraft transports health care workers to administer clinics. Without the state aircraft, these clinics would be prohibitively expensive and time consuming to run: A trip that would normally take three days by car takes only one by plane, a savings equivalent to two working days per employee (sixteen working days total for eight employees), for a total of $6400 in direct labor costs. Exhibit II-8 below, a simple back-of-the envelope calculation, considers only costs associated with labor and illustrates the savings achieved through travel when the state aircraft is used to accomplish in one day an activity that would otherwise require days.

Exhibit II-8: Example of Cost Savings of Time

Plane Travel	
Salary of Health Care Worker	$50 per Hour
Working Hours Per Day	8
Plane Capacity (B200)	8
Total Days of Trip	1
Total Cost Per Day	$3,200

Car Travel	
Salary of Health Care Worker	$50 per Hour
Working Hours Per Day	8
Plane Capacity (B200)	8
Total Days of Trip	3
Total Cost Per Day	$9,600

In addition, there are many intangible benefits not quantified in this example, including increased employee productivity due to the reduction in travel-related stress and the ability to work en route; enhanced government image in underserved communities; and safety,

security, and privacy issues achieved by traveling on the state airplanes as opposed to commercial airline.

1. Primary Business Benefits of State-Owned Aircraft

The primary benefits from state-owned aircraft are:

- *Increased Employee Efficiency*. Maintaining state aircraft ensures the most productive use of time; enables the leverage of key employees; increases employee productivity en route; and avoids airport delays associated with security and layovers.
- *Reduced Costs Associated with Travel Time*. Anecdotal evidence suggests that trips can be reduced by up to two to three days in spared driving time by choosing the services of the state aircraft rather than car travel.

The primary business benefits for maintaining centrally managed and operated state-owned airplanes are:

- *Lower Operating Costs*. Maintaining a single, central location at Salt Lake City reduces redundant and surplus facilities, thereby reducing maintenance and engineering costs that would be necessary if each government agency owned and operated their own aircraft.
- *Efficiencies in Crew Supervision and Management*. Centrally operated airplanes with a consolidation of crews allows for more efficient assignment and allocation of labor to projects and the efficient deployment of and access to equipment.

2. Secondary Business Benefits

The secondary business benefits of the state-owned airplanes are less quantifiable and include:

- *Flexibility.* The state aircraft enable efficient access to rural communities where commercial airlines may not fly. The state aircraft can be scheduled on last-minute notice and can be dedicated to emergency situations when necessary.
- *Safety, Security, and Privacy Issues.* The Governor and other state officials can be confident in the security of the state airplanes. Flying state-owned airplanes can reduce and eliminate exposure to certain security threats.
- *Enhanced Government Service and Outreach to Underserved and Minority Communities.* Many of the remote communities in Utah are comprised of underserved minority groups. The state airplanes enable key medical support to reach these communities, which do not have easily accessible primary health care facilities.

- *Increased Employee Efficiency*. State airplanes reduce travel fatigue and airport-related stress. Reduced travel fatigue results in increased post-trip productivity. This is extremely important for recruiting and retaining high-performing talent in state government.[10] The state airplanes also enable personnel to conduct business en route.

[10] NBAA "Business Aviation in Today's Economy" Summer, 2001. http://web.nbaa.org/public/news/stats/AndersenPart02.PDF

III. Overall Recommendations

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This section presents the overall recommendations for the management and financing of UDOT state aircraft and operations.

A. Recommendation 1. Fund the Division of Aeronautics air transportation services from the General Fund or an alternate source

Using money from the General Fund or alternate source ensures that the Aeronautics Restricted Account is available to support airport capital improvement and ensures the account is closely aligned with the enabling statute, *Utah Code Section 59-13-402*. The statute stipulates that the account is to support "the construction, improvement, operation, and maintenance of publicly used airports in the state." An alternate funding source will enable the funds to be used for their intended purpose.

B. Recommendation 2. Increase the use of aircraft to reduce the operating deficit

1. Set management targets for the minimum number of annual flight hours

Increasing the use of the planes will decrease the state subsidy of aircraft operations. Aircraft have fixed costs associated with their operation, including labor and overhead. Consequently, the more a plane is flown, the less the plane costs per hour to operate.

As previously described, there are unique constraints associated with population distribution patterns in Utah that may limit the amount that the state aircraft can actually operate. Operationally, the aircraft could be flown to the highest recorded use, or about 70% of total available days (about 350 hours per year per plane for a total of 700 flight hours per year). To achieve these flight hours will involve state agencies having sufficient demand which will be affected by their budget constraints.

2. Increase user fees at rate of inflation

User fees should increase at a rate comparable to the actual increase in operating costs. While this will not completely eliminate the deficit, it will prohibit an increase in the rate of growth of the deficit.

C. Recommendation 3. If aircraft are not able to reach targets set for the productive use of the State's assets, reduce capacity

1. Consolidate the two King Airs owned by the Division of Aeronautics and the Baron owned by DPS

Consolidating the Division of Aeronautics airplanes to a single aircraft would reduce fixed costs associated with maintenance and pilot salaries while still providing sufficient air transportation service for most flights. It should be noted that reducing the size of the fleet would reduce economies of scale in aircraft operations as some fixed costs would be distributed over fewer aircraft. Consolidating to a single aircraft would not automatically increase the efficiency of the aircraft, as some flights are scheduled for both aircraft in certain cases where agencies require the full passenger capacity of both aircraft. It is assumed that a certain number of flights are flexible and can be rescheduled. Alternative options for overflow should be identified for those flights which are not flexible in terms of schedule or which require passenger capacity greater than the eight seats available in the King Air B200.

2. Address overflow

Despite attempts to schedule steady aircraft use, there may be occasions when demand exceeds the reduced capacity. In the event that the fleet is consolidated, it may be necessary to have additional passenger capacity on call. This can be achieved through the partial ownership of an aircraft, chartering an aircraft from the private sector, or contracting with DPS for use of their aircraft.

Exhibit III-1 below compares the cost of charter flights to the cost of the state's King Air B200, $900 per hour, which covers only consumables. If the subsidy of the state's airplanes were considered, this rate would nearly double to $1,561 per hour.[11] None of the private sector options are directly equivalent to the state aircraft, although all provide comparable passenger capacity. The private sector would be a good option for overflow aircraft should the need arise for additional passenger capacity after consolidation.

Exhibit III-1 below compares flight options from Salt Lake City to St. George as well as flight options from Salt Lake City to Blanding, two of the top destinations to which the state airplanes fly.

[11] The figure $1,561 comes from dividing the target number of flight hours (700 hours) by the total cost of airplane operations for fiscal year 2008, or $1,093,089/700 hours.

Exhibit III-1: Comparison between Private Sector Alternatives and the State Airplanes[12]

Carrier	Aircraft	Functional Capabilities	Max. Speed (MPH)	Capacity	Total Cost*	Cost per person
Salt Lake to St. George (2.15-3 hours roundtrip)						
Commercial[13] (Delta/SkyWest)	Embraer 120ER	Turbo Prop		30	N/A	$342
MillionAir	Pilatus PC-12	Single Engine-Turboprop	290	8	$4,042	$505
Air Center of Salt Lake[14]	Merlin III	Twin Engine Turbo Prop	280	7	$3,400	$485
Salmon Air[15]	Piper Chieftain	Twin Engine Propeller	200	6-9	$1,065	$118
State Airplane[16]	King Air B200	Twin Engine Turbo Prop	300	8	$2,070	$258
State Airplane (no operating subsidy)					$3,592	$450

*Includes fuel surcharge, landing fees, and federal excise tax of 7.5%; assumes same-day return; additional fees for overnight are not included in estimate.

Carrier	Aircraft	Functional Capabilities	Max. Speed (MPH)	Capacity	Total Cost*	Cost per person
Salt Lake to Blanding (2.15-3 hours roundtrip)						
Commercial	N/A			N/A	N/A	N/A
MillionAir	Pilatus PC-12	Single Engine-Turboprop	290	8	$3,922	$490.25
Air Center of Salt Lake	Merlin III	Twin Engine Turbo Prop	280	8	$3,079	$384
Salmon Air[17]	Piper Chieftain	Twin Engine Propeller	200	9	$1,065	$118
State Airplane	King Air B200	Twin Engine Turbo Prop	300	8	$2,070	$258

[12] Estimates provided by private operators in request to charter inquiry. Estimates were provided during June and July 2008.
[13] Price quoted by Delta.com September 17, 2008
[14] This plane is based at Salt Lake Airfield #2, not Salt Lake City.
[15] Plane is located out of state and would not be available on short notice.
[16] According to the Division of Aeronautics' flight logs, the King Air B200 takes 2.3 flight hours to fly from Salt Lake to St. George round trip.
[17] This plane is located out of state and would not be available on short notice.

Carrier	Aircraft	Functional Capabilities	Max. Speed (MPH)	Capacity	Total Cost*	Cost per person
State Airplane (no operating subsidy)					$3,592	$450

*Includes fuel surcharge, landing fees, and federal excise tax of 7.5%; assumes same-day return; additional fees for overnight are not included in estimate.

D. Recommendation 4. Plan for and budget for the major refurbishment and replacement of aircraft

1. Establish an Engine Reserve Fund

Considering the remaining service life of the current aircraft, the cost of aircraft operations and the current level of aircraft use, it is unrealistic to expect to recapture the capital costs of purchasing new aircraft from user fees. The current level of use also makes it difficult to justify purchasing new aircraft; The King Air C90 manufacturer estimates a replacement aircraft price of $3.2 million. The Division should plan for the less costly option of engine overhaul and major refurbishment. The amount set aside in an Engine Reserve Fund would reduce the subsidy necessary for engine overhaul in the future.

Revenue for an Engine Reserve Fund could come from an additional user fee of $100 per flight hour charged to customers of the state airplanes. The purpose of the fund is to cover costs associated with engine overhaul, aircraft refurbishment, the purchase of additional equipment directly associated with the state airplanes, or for the purchase of new or replacement aircraft. Based on new management target hours recommended by this report (700 hours per year) and an additional fee of $100 per flight hour, the Engine Reserve Fund would accumulate $700,000 over a ten-year period. Any additional capital necessary should come from a General Fund appropriation.

There are inherent business risks in continuing to refurbish planes as opposed to purchasing new aircraft. These include: the increased maintenance costs associated with planes between ten and twenty years old; reduced resale and trade-in values of aging aircraft; and changes in FAA required maintenance and refurbishment practices, which could make maintaining ageing aircraft prohibitively expensive.

IV. Finance Options

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To continue the state's aircraft operations requires a General Fund subsidy. This section outlines options for the future financing of aircraft operations.

According to flight information and hourly annual usage of the aircraft, user fees would have to increase substantially to cover the full costs associated with aircraft operations, shown in Exhibit IV-1 below. If the targeted 700 hours of flight time were achieved, the cost per flight hour would be reduced.

Exhibit IV-1: Actual Cost of Flights per Hour

Fiscal Year	2004	2005	2006	2007	2008	TARGET
Airplane Expense	$878,206	$1,053,700	$1,097,639	$1,133,859	$1,093,089	$1,093,089
Flight Hours	696	679	672	605	600[18]	700
Cost per Hour	$1,261.79	$1,551.84	$1,633.39	$1,874.15	$1,821.81	$1,561.55

The full aircraft operating costs are higher than the service that can be bought in the private sector. (See Exhibit IV-1 for examples of private sector service). Charging for the full costs associated with airplane operations would most likely lead to a spiral of increasing costs and declining demand as agencies turned to less costly alternatives provided by the private sector, opted to drive rather than fly, or cancelled travel plans. Because airplane operations cannot recover the full costs associated with aircraft operations under current customer service demands, there will always be a deficit between user fee-generated revenue and airplane operations expenditures.

A. Status quo

Maintaining the status quo will result in a growing deficit. In FY 2008, this deficit totaled $660,000. The deficit reduces the funds available for airport construction and maintenance projects at a time when construction costs are increasing faster than revenue. This option does not address budgeting for aircraft refurbishment or replacement.

B. Finance based on the current operating deficit

This option would maintain the same, growing deficit of $587,000 to $613,000 annually but would finance the deficit from a source other than the Aeronautics Restricted Account, such as the General Fund. This option ensures that the Aeronautics Restricted Account funds are

[18] 600 hours flown in 2008 is a projection based on the hours flown by the aircraft from January 1st through July 21st, 2008. As of this date, the King Air B200 had flown a total of 128 hours and the King Air C90 a total of 197 hours.

available for airport improvement projects. This option implies that any future aircraft refurbishment or replacement will need to be financed from the General Fund.

C. Finance contingent upon a lower level of General Fund subsidy

This option requires the implementation of recommendations outlined in Section III of this report, including setting minimum targets for the number of flight hours operated by the state airplanes and increasing user fees. If these targets did not achieve the desired results, the airplanes should be consolidated to reduce costs.

Implementing the above recommendations will reduce the deficit, although not completely eliminate it. In this option, the minimized deficit will then be covered by a funding source other than the Aeronautics Restricted Account, such as the General Fund. The revenue from increased user fees achieved through increasing flight hours could reduce the deficit by up to 24%.

Exhibit IV-2: Reductions in the Aeronautics Deficit Based on the Implementation of Recommendations

Option	Current Deficit	Increased Revenue Based on Implementation of Recommendations	Percent Reduction in Deficit	Future Annual Deficit
Status Quo	$660,000	$0	0%	$660,000
Increased Revenue from Governor's Office	$660,000	$47,000 to $73,000	7 to 11%	$587,000 to $613,000
Increase to Target for Minimum Number of Flight Hours (350 per aircraft)	$587,000 to $613,000*	$82,000	13-14%	$505,000 to $531,000

D. Increase fees charged to use state aircraft as a contribution to an Engine Reserve Fund

This option reserves funds to meet some of the future capital costs associated with aircraft refurbishment and replacement. There is concern that further increasing charges for flight hours would decrease the use of the aircraft reducing revenue.

Appendix A

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This appendix provides additional background information from a survey of other states' aircraft operations. The survey of other states was designed to provide the following information:

- Where the responsibility of aircraft operations resides in their state governments
- How other states operate and fund their airplane operations
- Functional capabilities of these aircraft
- Cost of aircraft operations
- How other states plan for and budget for the capital expenditure of purchasing new aircraft

Exhibit A-1: Functional Capabilities of Airplanes in Other States

State	Responsible Department	Airplanes	Functional Capabilities of Airplanes	
			Description	Passenger Capacity
Arizona	N/A	No State Aircraft		
Colorado	State Patrol	King Air B200		8
Colorado	State Patrol	3-C182		2
Colorado	State Patrol	C340		4
Idaho	Idaho State Police/Division of Aeronautics	King Air B200	29 year old twin engine turbo-propeller	8
Idaho	Division of Aeronautics	Cessna 206	30 year old single-engine piston propeller	3-5
Idaho	Division of Aeronautics	Cessna 182	single-engine piston propeller; search for down or missing aircraft; transportation for airport visits	3
Montana	Air Transportation Program Governor's Office	Cessna 90		6
New Mexico	General Services Department, Transportation Division	Gulfstream Turbo Commander		5
New Mexico	General Services Department, Transportation Division	King Air E-90	Grounded and in the process of replacement	6
New Mexico	General Services Department, Transportation Division	Cessna Citation Bravo		6
Oregon	State Police/Fish and Wildlife	5 Cessnas, 4 are C185 and one is a C206	Cessna 185 is equipped for technically challenging missions such as tracking poachers at night, telemetry; Cessna 206 is for general air transportation	4
Washington	Department of Public Safety	2 King Air B200, 2 Cessna 206, 3 Cessna 182 Skyhawks	Cessnas are equipped for technical law enforcement missions. B200s are equipped as transportation aircraft.	8
Wyoming	Aeronautics	Cessna 206 Skywagon	Single-engine piston propeller	3-5

State	Responsible Department	Airplanes	Functional Capabilities of Airplanes	
			Description	Passenger Capacity
Wyoming	Aeronautics	Cessna 208 Caravan	Single engine turbine powered aircraft for survey missions	10-12
Wyoming	Aeronautics	(2) Cessna Citation Encore	2000 miles/tank	7

Exhibit A-2: Funding and Budgeting of Aircraft Operations in Other States

State	Responsible Department	Funding and Budgeting				
		Description	Funding Gaps	Capital Costs	Annual Operating Costs	Hourly Rates
Colorado	State Patrol	General Funds/User Fees funds from highway user tax	Funding Gaps are absorbed by the state patrol operating budget	Special Appropriations	Unavailable	Consumables + $100 for engine reserve fund
Idaho	Idaho State Police/Division of Aeronautics	Airpool Account and User Fees	No subsidies	No Capital Costs; planes are between 30-36 years old, no plans for replacement	$453,000	King Air B200 $720/hr + $62 one time fee to cover pre/post flight moving of aircraft, and $62/hr charge for time spent on the ground
Montana	Air Transportation Program Governor's Office	In FY08, only $825 was recovered from other agencies (no one was using plane from outside). Use BCA magazine as guide for business practices/rates of aircraft. There is a calculation that helps determine what hourly rate should be. This is not so useful since they have other restrictions legally about what they can/can't charge. Funding comes from Governor's office general fund.	All from Governor's office, general fund	Special Appropriations	$300,000 (FY08); $104,000 = personnel services/insurance (1.5 FTEs (pilot and copilot). Mechanics are contracted. $80,000 = fuel; $73,000 = maintenance	$600/hr (not legally allowed to charge more)
New Mexico	General Services Department, Transportation Division	Set up as enterprise but use general funds. Large funding gap since revenue only covers cost of consumables.	Special Appropriations	Special Appropriations	$1.6 million	$939; $1,140

State	Responsible Department	Funding and Budgeting				
		Description	**Funding Gaps**	**Capital Costs**	**Annual Operating Costs**	**Hourly Rates**
Oregon	State Police/Fish and Wildlife	Fish and Wildlife (ODFW) contributes half of total aircraft operating budget; the rest of the money comes from the Marine Board for boating enforcement and various other environmental agencies. ODFW gets money from tag and license sales; each agency can have use of craft based on contribution to pot of money which is determined annually. There is a hierarchy of flight priorities (e.g. emergencies get priority); ODFW should get at least 3/4 of available flight time based on their financial contribution.	No funding gaps-money comes directly from agencies which contribute a set fee based on total operating expenses. In other words, the agency does not invoice individual flights. The pilot is on the payroll of the State Police.	Sale of old aircraft paid for new aircraft; Aircraft was also purchased with a grant from the Oregon Watershed Enhancement board (funded by the state lottery)	Each C185 averaged about 45,000$/yr, includes hangar (but not pilot, overhead), fuel, and maintenance.	N/A
Washington	Department of Public Safety	Funding comes from the State Patrol Highway Account which is funded by license plate fees. Other funding is from the state General Fund.		Sale of Bonds/COPs	$5.7 million	$1,322/hr for the King Air B200; $314 for Cessnas (this includes a fuel surcharge)
Wyoming	Aeronautics	General Funds/User Fees	Special Appropriations	None	$1.24 million	Consumables

Appendix B

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Appendix B details revenues and expenditures from the Aeronautics Restricted Account and is meant to provide a snapshot of the source and use of funds of the Division of Aeronautics as they relate to this account.

Exhibit B-1 below presents a cash flow analysis of revenues and expenditures to the Aeronautics Restricted Account from FY 2008. Each revenue and expenditure is detailed below. Beginning in FY 2010, the way that aircraft registration fees are collected will change. The Division of Aeronautics estimates that this change will increase revenue to the Aeronautics Restricted Account by an additional $300,000 annually.

Exhibit B-1: Example Cash Flow FY 2008 – UDOT Aeronautics

	Item	FY 2008
Aeronautics Restricted Account Opening Balance		$4,926,077
REVENUE		
1	Aviation fuel tax	7,042,361
2	License Fees	272,168
3	Interest Income	216,217
4	Aircraft Revenue	474,118
5	FAA Grant to Aeronautics	337,050
Total Revenue		$8,341,914
EXPENDITURES		
6	Pass through of fuel tax	2,837,135
7	Administration	533,688
8	Airplane Operations	1,146,823
9	Civil Air Patrol	74,926
10	State Projects	3,010,624
Total Expenditures		$7,603,196
Aeronautics Restricted Account Sub Balance		$5,664,795
Less committed funds from FY 06, FY07, FY08 projects but not yet paid		$1,679,070
Aeronautics Restricted Account Closing Balance 11		**$3,985,725**

- Aviation Fuel Tax (Line 1): This is the total aviation fuel tax collected by the state from the sale of aviation fuel (both jet fuel and avgas). Of this, the Pass through Aviation Fuel Tax (Line 6) is the amount returned to the airports where the fuel was sold. The difference between Line 1 and Line 6 is the net aviation fuel tax revenue retained in the Aeronautics Restricted Account. All five of the Division's organizations are funded through this account.
- License Fees (Line 2): The sum of aircraft registration fees and Airport license fees.
- Interest Income (Line 3): Interest earned on funds held in the Aeronautics Restricted Account.
- Aircraft Revenue (Line 4): The sum of all revenue from aircraft user fees, mechanic fees and rent charged to other state agencies for hangar space.
- FAA Grant to Aeronautics (Line 5): The sum of all FAA grants issued to the Division of Aeronautics during the year for services performed.
- Pass Through of Fuel Tax (Line 6): The sum of state aviation fuel tax returned to airports where aviation fuel was sold.
- Administration (Line 7): The total cost of administration for the Division of Aeronautics, including the salaries of four full-time employees and office expenses.
- Airplane Operations (Line 8): The costs associated with flight operations including consumables (fuel, aircraft parts, etc) as well as pilot and mechanic salaries.
- Civil Air Patrol (Line 9): The annual appropriation to financially support the Utah Wing of the Civil Air Patrol. CAP performs search & rescue and emergency services for the state.
- State Projects (Line 10): This represents the amount of money earmarked for airport maintenance and improvement projects. When aircraft operations expenditure exceeds budgeted funding for the fiscal year, money is taken from the construction fund to cover the difference.
- Aeronautics Restricted Account Closing Balance (Line 11): This represents non-committed funds which are still outstanding and does not include programmed funds from FY 2009.